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Is Education 1.0 Ready for Web 2.0 Students?

by John Thompson

Web 2.0 is here. Internet users are not only finding information on the Internet; they are also creating and uploading content. What will be the impact on colleges and universities as more digitally savvy students, those who are accustomed to Web 2.0's two-way information exchange, enter their halls? Beginning with an exploration of the meaning and application of Web 2.0, this article considers how Net Generation students with Web 2.0 expectations will reshape institutions of higher education.

Web 2.0

What is Web 2.0? If Web 1.0 was a read-only medium, Web 2.0 is a read/write medium. The Internet's first mass market stage of development saw users going to the Internet to find information. It was pretty much a one-way experience, similar to going to the library to find a book. In contrast, Web 2.0 relies on user participation. As explained in its listing in Wikipedia.com (itself a Web 2.0 application), the term Web 2.0 refers to a "second generation of services available on the World Wide Web that lets people collaborate and share information online" (Wikipedia.com 2006, ¶ 1).

This emphasis on user participation characterizes the definitions of Web 2.0 offered by most commentators and advocates as well. For example, Downes (2005) sees the development of Web 2.0 as a shift "from being a medium, in which information was transmitted and consumed, into being a platform, in which content was created, shared, remixed, repurposed, and passed along" ("Web 2.0," ¶4). Tim O'Reilly, a successful computer book and online media publisher, defines Web 2.0 in very similar terms:

Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences. (2005, ¶1)

Web 2.0 thus exemplifies the increasing prominence of the individual as anyone can create and upload print, audio, and video to the Internet. Not too long ago, adding Web content was the province of Internet designers who had the necessary knowledge and time to create Web pages using complicated computer programming. Now, easy-to-use Internet sites encourage users to post their own materials to the Internet without having to know HTML programming codes. Through Web-based applications and services such as Web logs (blogs), video blogs (vlogs), podcasts, and wikis, anyone with a computer connected to the Internet can be part of the Web 2.0 experience.

While such technologies have all greatly contributed to the Web 2.0 phenomena, social networking sites such as MySpace.com and Facebook.com have had a particularly strong influence in the lives of millions of students. These sites let members create their own Web pages, complete with personal profiles, descriptions of their interests, photos, blogs, and a growing array of other features that help members connect with others having similar interests. The online MySpace community has ballooned to more than 160 million members in just a few years. Over 200,000 new members sign up each day; it is one of the most visited Internet sites in the world. The social networking site of choice for most students is Facebook.com, which describes itself as

"a social utility that helps people better understand the world around them. Facebook develops technologies that facilitate the spread of information through social networks, allowing people to share information online the same way they do in the real world" (Facebook.com 2006, ¶1). Although Facebook has only been in existence since February 2004, when it was started by several students at Harvard University, it now has over 19 million registered users and ranks among the top 10 most visited Internet sites. The success of MySpace, Facebook, and other popular networking sites such Friendster.com, Tagged.com, Xanga.com, and Orkut.com has prompted the development of hundreds of social networking sites. TagWorld.com, Zaadz.com, and Cyworld.com are among a growing list poised to attract thousands or millions of members of their own.

Through such technologies, the Internet is no longer a series of isolated silos of information; it has become a platform for users to communicate and interact with one another. Web 2.0 could be characterized as a social phenomenon that creates and distributes Internet content through a paradigm of "open communication, decentralization of authority, [and] freedom to share and re-use" material (Wikipedia.com 2006, "Introduction," ¶4).

The Challenge for Institutions of Higher Education

In his essay "Farewell Information, It's a Media Age" futurist Paul Saffo (2005) sees Web 2.0 as the age of personal media. He speaks of the change from consumer to creator as evidenced by the rapid growth of blogs. According to Technorati, which tracks over 70 million blogs, over 175,000 new blogs are created every day. If Saffo is correct about the rise of the Internet as a personal medium, students will soon arrive at college expecting a transformative form of education. Marc Prensky (2001) similarly describes today's students as digital natives who have functioned in a digital environment for most of their lives; as a result, technologies that faculty and staff typically see as revolutionary are routine for today's entering college students. Net Generation students arrive at their universities as experienced multitaskers, accustomed to using text messaging, telephones, and e-mail while searching the Internet and watching television (Roberts 2005). They are ready for multimedia learning to be delivered on a flexible learning schedule, one that is not tied to a set time and place.

Recent information on student expectations already reveals significant changes that should be anticipated by educators. While today's students still see faculty knowledge and expertise as the most important element in learning (Roberts 2005), an EDUCAUSE survey reports that they will want faculty members to use information technology to communicate that knowledge better (Kvavik and Caruso 2005). Forty-one percent of the students surveyed said they preferred instructors to make moderate use of information technology while 27% wanted extensive use and 26% said they preferred only limited use. In light of the rapid expansion of Web 2.0 technologies in the everyday lives of students, such preferences are likely to become even more pronounced in newer generations of learners wanting more technology use by faculty members.

Will administration and faculty react against these students, or will they respond thoughtfully to a new student body that is accustomed to the Web 2.0 environment? Will the use of such social networking sites as MySpace.com and Facebook.com, information sites like Wikipedia.com, and communication vehicles such as podcasts and wikis cause consternation, or will institutions of higher education learn to incorporate Web 2.0 applications in a positive and educational way?

Incorporating Web 2.0 in Higher Education: Precedents for Future Transformation

Few could have foreseen the growth of Facebook.com and its counterparts, but educators now need to be aware of social networking sites since so many college students have embraced their capabilities. My colleagues do not use Facebook in their classes, and they are possibly missing an opportunity to capitalize on their students' involvement with the sites. However, some faculty members do incorporate Facebook in tentative yet innovative ways. For example, one instructor uses Facebook as a publicity vehicle for his study-abroad trips (Lemuel 2006). Another uses it as a venue for advertising events and then gives students an assignment asking them to analyze the site (Silver 2006). A third finds it a useful tool for screening

potential undergraduate teaching assistants (Mick La Lopa, e-mail to author, November 2, 2006). Instructors might not yet be embracing social networking sites as teaching or learning tools, but they are using them as communication and information gathering tools.

College instructors are also using other Web 2.0 applications in innovative ways. As noted by Bryan Alexander, social bookmarking sites such as del.icio.us facilitate a new kind of collaborative research since "finding people with related interests can magnify one's work by learning from others or by leading to new collaborations"; moreover, the user-based tagging afforded by such sites "can offer new perspectives on one's research, as clusters of tags reveal patterns (or absences) not immediately visible" (Alexander 2006, 36). In turn, social writing platforms such as wikis and Google Docs, which allow two or more people to edit a document in real time on the Internet, can be integrated into coursework (Ferris and Wilder 2006). In particular, such affordances can support collaborative projects in writing-intensive courses: "Pedagogically, one can imagine writing exercises based on these tools, building on the established body of collaborative composition practice. These services (social writing platforms) offer an alternative platform for peer editing, supporting the now traditional elements of computer-mediated writing" (Alexander 2006, 38). Blogs can be used to expand course activities beyond the four walls of the classroom, so students are writing for a worldwide audience instead of only for classmates and the instructor. Student motivation may increase when their writing can be read by thousands instead of a handful. Downes (2004) offers several suggestions for using blogs, including having instructors use blogs that provide course information and embed URLs that connect to course content. Stuart Glogoff (2005) further documents a range of blog uses based on the experiences of his colleagues as well as his own use of the technology in a library science course taught at the University of Arizona. Meanwhile, perhaps one of the best examples of Web 2.0 pedagogical practice can be found in a graduate course at Columbia University where students studied the capabilities of all these technologies—social bookmarking (or "distributed classification systems"), wikis, blogs, and other tools—and employed them directly in their own distributed research projects (Mejias 2006).

Colleges are also using Web 2.0 outside of the instructional context. Campus administrators and police harvest information from online discussions and postings to monitor possible illegal activities and to keep a finger on the pulse of the campus. Tufts University combined Google's mapping technology with institution of higher education (IHE) information to create a mashup complete with "satellite images, informative links, [and] category searches" in order to provide "a resource that enables prospective and current students, staff, faculty, campus visitors, community members, and others to explore the campus online and locate buildings and services" (Campus Technology 2006 ¶2). At Penn State University, cellphone text messaging services now quickly and easily send announcement to students according to their own preferences (Carnevale 2006). Meanwhile, the dining services at other institutions such as Marywood University, Purdue University, and Berkeley College employ Web 2.0 platforms in Web-based kiosks where "students can use a touch screen and check their meal plan balances, see the day's menus, or even send a special dietary request or feedback to the dining director. A password and log-in system lets them create nutritional charts for themselves and track nutritional intake throughout the day" (Esposito 2006, "The Student Pulse," ¶4).

In turn, an initiative at Duke University may serve as a particularly notable example of Web 2.0 innovation. Duke made headlines in 2004 when it gave iPods to incoming freshmen as part of its multiyear Duke Digital Initiative to "stimulate creative uses of digital technology in academic and campus life" (Duke 2006a, ¶1). Duke has developed a number of supported educational uses for iPods, many of which include interactive elements typical of Web 2.0. Students create or record lectures, discussions, interviews, and presentations and then upload audio or image files to shared course space. Instructors record everything from interviews and oral exams to classroom lectures and download student contributions from the course space to their own iPods. (For a list of courses that have used iPods, see the iPods at Duke portion of the Web site.) In addition to testing Web 2.0 applications on the iPod, Duke is researching how various other multimedia and technology tools "may be useful in the academic setting, particularly in the areas of podcasting, creation of multimedia instructional materials, student video projects, use of tablet PCs, and digital capture of classroom lectures and presentations" (Duke 2006b, ¶19).

While Duke has taken on a pioneering role, other IHEs, recognizing that students have grown accustomed to using such interactive sources as podcasts and online social communities, are experimenting with using Web 2.0. Buffalo State College, for instance, incorporates Web 2.0 in its [Web site](#) by making Really Simple Syndication ([RSS](#)) available to subscribers so that they may receive targeted information delivered directly to their computers. The college also uses podcasts to promote events, and instructors utilize them in their teaching. Additionally, the college allows potential students to communicate directly with an admissions representative using AOL Instant Messenger.

Prospects for Long-Term Transformation

With such a diverse use of Web 2.0 applications at IHEs, the potential for such applications seems vast, but its reach is yet undetermined. Long-held learning beliefs and established educational methods must be reshaped in order to incorporate the benefits of Web 2.0. The change process might resemble the evolution of the movie industry, which started by filming actors on a proscenium stage as though they were doing a play. It took time for filmmakers to move the actors off stage and into studios and even more time for them to begin making movies on location. Similarly, it will take time for IHEs to adjust to Web 2.0 and all it can do, and all the while, Web 2.0 applications will continue to evolve, making the process of change much more complicated. Web 2.0 is a potentially disruptive technology because of its potential to change the model of higher education from the traditional classroom framwork to an asynchronous 24/7 mode. IHEs historically do not cope well with disruption, especially in the short term; however, coping with this disruptive force could mean engaging students in extended collaborative learning opportunities. From this perspective, the perceived disruption could entail many positive implications for higher education. Changing to accommodate Web 2.0 students probably will happen in fits and starts, just as the integration of technology has occurred in the business world. No one knows yet what this new model will look like, but the variety of strategies examined above provides partial glimpses.

What may occur with the introduction of Web 2.0 into IHEs could be analogous to the "Starbucks Effect." Hammonds ([2006](#)) describes the effect of a Starbucks arriving in a community whose businesses have not been responsive to consumer wishes. The new arrival quickly grabs market share away from long-established local businesses. Starbucks typifies the "continuous emergence of new competitors with superior business models that force us to reconsider the viability of what we've always done. And it will only grow more intense" (Hammonds [2006](#), 31). IHEs are not immune to this kind of competition. The University of Phoenix ([UOP](#)), founded in 1976 and granted initial accreditation in 1978, now has over 250,000 students. UOP marketed itself toward adult and other nontraditional students, students whose needs were being largely ignored by IHEs at the time. Campus services at UOP were made available online in order to accommodate students who could not get to the college campus during the day; subsequently, courses were offered online.

Until recently, IHEs have had no compelling incentive to change and limited impetus to challenge the way the core business of education—"creating, processing and disseminating knowledge in the search for truth" (Rajasingham [2005](#), "Introduction," ¶1)—was delivered, but as the UOP model has shown, not changing to meet student needs can result in students going elsewhere. UOP's rapid growth is largely a result of its attention to the needs of students who were not being adequately served by other IHEs. Today's IHEs need to consider how they can move from being Education 1.0 institutions because their competitors, like UOP, are revising how they provide services and coursework using Web 2.0 applications.

Conclusion

To move our educational practices forward, we will need an understanding of our users and their changing behavior, a willingness to experiment with new business models, and an appreciation of hybrid organizations that take advantage of skills contributed by various players with diverse backgrounds. Leadership of such an organization will require an appreciation of each of those players and of the value of each of their contributions as well as a clear and imaginative view of the future information landscape. It will not be easy, but the next generation will create new models of scholarly publishing and learning, regardless of whether we

choose to participate. The only question will be what role we carve out for ourselves (Wittenberg 2006, 20).

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